

REMARKS

This application has been amended in a manner that is believed to place it in condition for allowance at the time of the next Official Action.

Claims 27-33 are pending in the present application. Claim 27 is directed to a phytosanitary method for the protection of plants against pathogens or predators and/or for facilitating the adaptation of plants to raised ozone levels, comprising applying to said plants a 1,3 β -D-glucanase amplifying effective amount of oligo 1,4 β -D-mannuronans.

Independent claim 30 has been amended to recite a method for controlling abscission, controlling growth or maturation of a pistil or anthers, controlling organization of cell walls during expansion of tissues and/or reinforcing plant cell walls and adapting them to environmental stimuli, comprising applying to plants a 1,3 β -D-glucanase/1,4 β -D-glucanase/xyloglucan endotransglycolase amplifying effective amount of oligo 1,4 β -D-mannuronans.

Claims 27-33 were rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Adachi et al (US Patent 5,588,254).

In imposing the rejection, the Office Action states that, "Claim 27 is drawn to a method of protecting plants (a phytosanitary method) comprising applying to the plant a

composition comprising a 1,3 β -D-glucanase amplifying effective amount of oligo 1,4 β -D-mannuronans". "Claim 30 is drawn to a method of treating plants (a biofertilizing method) comprising applying to the plant a composition comprising a 1,4 β -D-mannuronan".

However, applicants respectfully submit claim 27 is not drawn to a general method of protecting plants. Rather, claim 27 is drawn to a specific method for the protection of plants against pathogens or predators, and the adaptation of plants to raised ozone levels, said method being carried out by using oligo 1,4 β -D-mannuronans.

Claim 30 is drawn to a specific method for controlling abscission, controlling growth of the pistil or maturation of the anthers, controlling the organization of cell walls during expansion of the tissues and for reinforcing the plant cell walls and adapting them to environmental stimuli, said method being carried out by using oligo 1,4 β -D-mannuronans.

As a result, applicants do not believe that Adachi et al. disclose or suggest the claimed invention. Indeed, if according to the Office Action, Adachi et al. disclose a method of applying the same compounds to plants as those claimed, it should be unambiguously described in Adachi et al. that the oligosaccharide compositions containing only oligo 1,4 β -D-mannuronans have been obtained and are active for the treatment

of plants described in said patent. However, applicants respectfully note that this is not the case.

Adachi et al. teach that the alginic acid oligosaccharide used for treating plants is a composition comprising guluronic acid only or mannuronic acid only having a polymerization degree of 2 to 20, or is composed of a combination of the guluronic acid and the mannuronic acid, or is a mixture of the guluronic and the mannuronic acid.

Furthermore, in the Examples of Adachi et al (Examples 1 to 11), the actual composition of the oligosaccharide is not taught. Indeed, Adachi et al. never performed a purification procedure and analysis of the decomposition product obtained.

Consequently, as there is no separation between the oligomers contained in the oligosaccharide composition tested by Adachi et al. Thus, applicants submit that this composition must contain a mixture of oligomers containing guluronic acids and mannuronic acids.

Thus, applicants submit that Adachi et al. cannot be considered to inherently teach the recitations of the claimed invention. Indeed, inherency must be a necessary result and not merely a possible result. *In re Delrich*, 666 F.2d 578, 212 USPQ 323 (CCPA 1981). In view of the above, one skilled in the art cannot say that it is certain that Adachi et al. use the composition as set forth in the claimed invention.

In view of the above it cannot be deduced from Adachi et al. that compounds which cannot be unambiguously identified as being active in the frame of a particular use, are compounds that present properties so that the compounds are undoubtedly active in the frame of a different use.

It cannot be taken from Adachi et al. that compounds corresponding to oligo 1,4 β -D-mannuronans, which cannot be unambiguously identified as being active in the frame of the acceleration of the growth of plants, are compounds which are active for the protection of plants against pathogens or predators, the adaptation of plants to raised ozone levels, the control of abscission, growth of the pistil or maturation of the anthers, the control of organization of cell walls during expansion of the tissues and for reinforcing the plant cell walls and adapting them to environmental stimuli, as a result of the 1,3 β -D-glucanase, 1,4 β -D-glucanase, and xyloglucan endotransglycolase amplifying effects of said oligo 1,4 β -D-mannuronans.

Indeed, the protection of plants against pathogens or predators, and the adaptation of plants to raised ozone levels, represent effects which are linked to the activation of 1,3 β -D-glucanase, the control of abscission, growth of the pistil or maturation of the anthers, represent effects which are linked to the activation of 1,3 β -D-glucanase and 1,4 β -D-glucanase, the

control of organization of cell walls during expansion of the tissues, the reinforcement of the plant cell walls and their adaptation to environmental stimuli, represent effects which are linked to the activation of the xyloglucan endotransglycolase.

Adachi et al. do not disclose nor suggest the use of oligo 1,4 β -D-mannuronans in a method for the protection of plants against pathogens or predators, and the adaptation of plants to raised ozone levels, as claimed (claims 27 to 29), or in a method for controlling abscission, controlling growth of the pistil or maturation of the anthers, controlling the organization of cell walls during expansion of the tissues and for reinforcing the plant cell walls and adapting them to environmental stimuli, as claimed (claims 30 to 33).

As a result, applicants submit that it cannot be stated that applicants' discovery is a discovery of differing effects of a prior method. The prior method is a method for accelerating the growth of plants, and the methods as claimed in the present invention are a method for the protection of plants against pathogens or predators, and the adaptation of plants to raised ozone levels, and a method for the control of abscission, the control of growth of the pistil or maturation of the anthers, the control of organization of cell walls during expansion of the tissues and for reinforcing the plant cell walls and adapting them to environmental stimuli.

Thus, Adachi et al. fails to disclose or suggest the subject matter of the present application.

Claims 27-33 were rejected under 35 U.S.C. 102(b) as allegedly anticipated by Kaisha (JP 4335839). This rejection is respectfully traversed.

Kaisha (JP 4335839) describes the use of an alginic acid oligosaccharide composition comprising an oligosaccharide of DP 2-20 containing :

- guluronic acid only and/or mannuronic acid, or
- guluronic acid only and/or mannuronic acid, and 4'5-deoxyuronic acid,

in a method for obtaining artificial seeds from plant tissue or cell which have been placed in culture media containing said oligomers.

Kaisha discloses the use of an alginic acid oligosaccharide composition as mentioned above in a method for obtaining artificial seeds by applying the oligosaccharide to plant tissue or cell, but certainly not the use of oligo 1,4 β -D-mannuronans in a method for the protection of plants, or a specific method for the control of abscission, the control of growth of the pistil or maturation of the anthers, the control of organization of cell walls during expansion of the tissues and for reinforcing the plant cell walls and adapting them to

environmental stimuli, by applying said oligo 1,4 β -D-mannuronans to the whole plant, and not to plant tissue or cell.

The protection of plants against pathogens or predators, and the adaptation of plants to raised ozone levels, or the control of abscission, growth of the pistil or maturation of the anthers, the control of organization of cell walls during expansion of the tissues and the reinforcement of the plant cell walls, represent specific effects which are linked to the activation of 1,3 β -D-glucanase, 1,4 β -D-glucanase, and xyloglucan endotransglycolase, as mentioned above, whereas the effect of producing efficient artificial seeds mentioned in Kaisha is the result of an effect which is not linked to these enzymes.

The claimed methods are carried out by applying the oligo 1,4 β -D-mannuronans to the whole plant, and are different from the method described in Kaisha which is carried out by applying an oligosaccharide composition to plant tissue or cell which have been placed in culture media containing said composition.

Thus, it cannot be deduced from Kaisha that compounds corresponding to oligo 1,4 β -D-mannuronans which cannot be unambiguously identified as being active for obtaining artificial seeds, are compounds which are specifically active for the protection of plants against pathogens or predators, the

adaptation of plants to raised ozone levels, the control of abscission, growth of the pistil or maturation of the anthers, the control of organization of cell walls during expansion of the tissues and for reinforcing the plant cell walls and adapting them to environmental stimuli, as a result of the 1,3 β -D-glucanase, 1,4 β -D-glucanase, and xyloglucan endotransglycolase amplifying effects of said oligo 1,4 β -D-mannuronans.

Thus, in view of the above, applicants believe that Kaisha fails to disclose or suggest the claimed invention.

Claims 27-33 were rejected under 35 U.S.C. 102(b) as allegedly anticipated by Shigematsu et al (US Patent 4,226,855).

Shigematsu et al disclose a plant viral disease preventive composition comprising an alginate having a neutralization degree of 10 to 30%, and a viscosity of 2 to 10 centipoises, in combination with a biopolymer, a carbonate, an organic acid, a solid carrier, and a surface active agent.

The composition of the oligomers in the alginates described in Shigematsu et al, together with their polymerization degrees, are not mentioned in this document.

Thus, it cannot be deduced from this document that the active(s) oligosaccharide(s) for protecting plants against viral disease, are oligomannuronans, much less oligo 1,4 β -D-mannuronans of DP less than 30.

Furthermore, it must be emphasized that the preferred alginates in Shigematsu et al must have a viscosity of at least 3 cp, whereas the preferred oligo 1,4 β -D-mannuronans of DP4 of the present invention, have a viscosity equivalent of the viscosity of water, i.e. 1 cp, and thus do not fall in the definition of the alginates claimed in Shigematsu et al.

Thus, in view of the above, applicants believe that Shigematsu et al. fails to disclose or suggest the claimed invention.

At this time, the Examiner's attention is respectfully directed to claim 33. As far as claim 33 is concerned, applicants believe that it cannot be deduced from Adachi et al., Kaisha, or Shigematsu et al., that oligo 1,4 β -D-mannuronans of DP 4 have an xyloglucan endotransglycolase amplifying effect superior to other oligosaccharides of DP 8 as described in the present application (see figure 1). Indeed, in view of the foregoing arguments and unexpected results already set forth in the specification, applicants believe that the above-identified application, alone or in combination, fails to disclose or suggest the claimed invention.

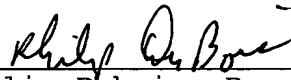
In view of the present amendment and the foregoing remarks, therefore, applicants believe that the present application is in condition for allowance at the time of the next

Official Action. Allowance and passage to issue on that basis are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



Philip Dubois, Reg. No. 50,696
745 South 23rd Street
Arlington, VA 22202
Telephone (703) 521-2297
Telefax (703) 685-0573
(703) 979-4709

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